

DaimlerChrysler AG

Patent claims

- 5 1. A tool (1) for cutting a hollow profile (2),
characterized in that
- the tool (1) is designed for cutting a flange (3) on
the hollow profile (2),
 - the tool (1) is also designed for forming the hollow
10 profile (2) according to the internal high pressure
forming process,
 - the tool (1) has at least one cutting device (4) which
runs parallel to the longitudinal extent, has a cutting
edge (5) and is displaceable in the transverse direction
15 of the hollow profile (2),
 - a side (6) of the cutting device (4) facing the hollow
profile (2) is designed as a shaping die wall (17),
against which the hollow profile (2) bears at least
during the internal high pressure forming.
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2. The tool as claimed in claim 1, characterized in
that the tool (1) has a bottom die (7) and a top die (8)
which are displaceable relative to one another.
- 25 3. The tool as claimed in claim 2, characterized in
that
- the cutting device (4) is integrated in one of the dies
(7, 8) and the cutting edge (5) forms an integral part
of the respective die (7, 8), or
 - 30 - the cutting device (4) is designed as a separate
component and is fastened to one of the dies (7, 8) in a
fixed position, or
 - the cutting device (4) is arranged on one of the dies
(7, 8) in such a way as to be adjustable in stroke.

4. The tool as claimed in one of claims 1 to 3, characterized in that a positioning device (9) is provided which, before the cutting and forming operation,
5 presses the hollow profile (2) against that side (6) of the cutting device (4) which faces the hollow profile (2).

5. The tool as claimed in one of claims 1 to 4,
10 characterized in that at least one hold-down (10), which fixes the flange (3) of the hollow profile (2) at least during the cutting operation, is provided in the region of the cutting edge (5).

15 6. The tool as claimed in one of claims 1 to 5, characterized in that an embossing punch (11) is provided which is displaceable transversely to the longitudinal extent of the hollow profile (2) and which makes an embossment on the outside of the hollow profile (2) after
20 the forming operation.

7. The tool as claimed in claim 6, characterized in that the embossing punch (11) is arranged in such a way that it crosses and passes through the cutting device (4)
25 in a corresponding opening (12) during the embossing operation.

8. The tool as claimed in either of claims 6 and 7, characterized in that at least one perforating punch (13)
30 is provided in the embossing punch (11) coaxially thereto, this perforating punch (13) perforating the hollow profile (2) after the embossing operation has been completed.

9. A method of cutting a hollow profile, characterized in that

- a flange (2) on the hollow profile (2) is cut by means of a cutting device (4) which runs parallel to the longitudinal extent of the hollow profile (2) and has a cutting edge (5) which is displaced transversely to the longitudinal extent of the hollow profile (2),
- the hollow profile (2), after the cutting operation, bearing during the internal high pressure forming against that side (6) of the cutting device (4) which faces the hollow profile (2) and which is designed as a shaping die wall.

10. The method as claimed in claim 9, characterized in that, before the cutting and forming operation, a positioning device (9) presses the hollow profile (2) against that side (6) of the cutting device (4) which faces the hollow profile (2).

11. The method as claimed in either of claims 9 and 10, characterized in that at least one hold-down (10) arranged in the region of the cutting edge (5) fixes the flange (3) of the hollow profile (2) at least during the cutting operation.

12. The method as claimed in one of claims 9 to 11, characterized in that the flange (3) is cut by closing the tool (1).

13. The method as claimed in one of claims 9 to 12, characterized in that an embossing punch (11) displaceable transversely to the longitudinal extent of the hollow profile (2) makes an embossment on the outside of the hollow profile (2) after the forming operation.

14. The method as claimed in claim 13, characterized in that the embossing punch (11) crosses and passes through the cutting device (4) during the embossing operation.

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15. The method as claimed in either of claims 13 and 14, characterized in that at least one perforating punch (13) arranged in the embossing punch (11) coaxially thereto perforates the hollow profile (2) before or after the

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embossing operation.